

Claims:

1. A lift-assisted device comprising:
a patient support structure having a movable yoke;
a base;
an undercarriage extending between the patient support structure and the base; and
at least one pneumatic cylinder extending between the movable yoke and a part of the patient support structure for applying a driving force on the movable yoke to raise or lower the patient support structure with respect to the base.
 2. A lift assisted device as set forth in Claim 1, wherein the at least one pneumatic cylinder comprises two pneumatic cylinders.
 3. A lift assisted device as set forth in Claim 1, wherein the undercarriage has a member attached to the movable yoke for raising or lowering the patient support structure with respect to the base.
 4. A lift-assisted device as set forth in Claim 1,
the undercarriage having:
at least one first scissors linkage member pivotally connected to the movable yoke and pivotally connected to the base,
at least one second scissors linkage member pivotally connected to the first scissors linkage member, pivotally connected to the patient support structure, and slidably connected to the base.
 5. A lift-assisted device as set forth in Claim 4, wherein the first scissors linkage member has two upper ends pivotally connected to the movable yoke, and two lower ends pivotally connected to the base, and
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wherein the at least one second scissors linkage member comprises two scissors linkage members, each of the second scissors linkage members being arranged laterally outward of the first scissors linkage member and being pivotally connected to the first scissors linkage member, and each of the two second scissors linkage members having an upper end pivotally connected to the yoke and a lower end slidably connected to the base.

6. A lift-assisted device as in Claim 4, wherein at least one of the first scissors linkage member and the second scissors linkage member comprises a composite of resin and carbon fiber.

7. A lift-assisted device as in Claim 4, wherein each of the first scissors linkage member and the second scissors linkage member is formed of a composite of resin and carbon fiber.

8. A lift-assisted device as set forth in Claim 1, wherein the patient support structure comprises a hollow body forming a support for the at least one pneumatic cylinder.

9. A lift-assisted device as set forth in Claim 8, wherein the hollow body has at least one recess extending through the hollow body for housing the at least one pneumatic cylinder.

10. A lift-assisted device as set forth in Claim 8, the hollow body having at least one additional recess for storing a tank of compressed gas.

11. A lift assisted device as set forth in Claim 8, the patient support structure includes a hinged head portion and a hinged foot portion, each of the head portion and the foot portion being pivotally connected to the hollow body.

12. A lift assisted device as set forth in Claim 11, wherein the patient support structure includes a lifting cylinder arranged to maintain the head portion in a raised position.

13. A lift-assisted device as set forth in Claim 1, wherein the base comprises at least one recessed track for slidable movement of a part of the undercarriage along the track.

14. A lift assisted device as set forth in Claim 13, further comprising a bearing disposed in the track between the slidable part of the undercarriage and a surface of the recessed track.

15. A lift-assisted device as set forth in Claim 1, including a plurality of wheels for moving the lift-assisted device over a surface.

16. A lift-assisted device as set forth in Claim 15, wherein the wheels are of monocoque construction.

17. A lift-assisted device as set forth in Claim 15, wherein the wheels are castered and are spring-loaded.

18. A lift-assisted device as set forth in Claim 1, wherein the base includes at least one attachment point for attachment of the device to a transport vehicle.

19. A lift-assisted device as set forth in Claim 1, comprising at least one compressed gas cylinder in communication with the at least one pneumatic cylinder.

20. A lift assisted device as set forth in Claim 19, wherein the compressed gas cylinder is a self contained breathing apparatus tank.

21. A lift assisted device as set forth in Claim 19, wherein the compressed gas cylinder is an oxygen tank.

22. A lift-assisted device as set forth in Claim 1, further comprising:
a valve in communication with the at least one pneumatic cylinder; and
a control handle in communication with the valve for providing compressed gas to the at least one pneumatic cylinder.

23. A lift-assisted device as set forth in Claim 1, comprising a height adjustment and locking mechanism.

24. A lift-assisted device as set forth in Claim 23, wherein the height adjustment and locking mechanism includes a locking bar positioned for locking engagement with the movable yoke.

25. A lift-assisted device as set forth in Claim 23, wherein the locking bar is rotatable and has notches.

26. A lift-assisted device as set forth in Claim 23, wherein the yoke has an notched opening shaped to receive the locking bar,
wherein the locking bar extends through the opening, and notches on the locking bar are adapted to engage a notch of the yoke opening to prevent longitudinal movement of the yoke.

27. A lift-assisted device as set forth in Claim 1, further comprising a slidable terrain engaging device mounted to the base.

28. A lift-assisted device as set forth in Claim 27, wherein the slidable terrain engaging device is arranged between a lower surface of the base and a ground-contacting portion of the plurality of wheels.

29. A lift assisted device as set forth in Claim 1, comprising at least one loading wheel disposed at an end of the patient support structure.

30. A lift-assisted device as set forth in Claim 29, comprising a movable support structure for attaching the at least one loading wheel to the patient support structure.

31. A lift-assisted device as set forth in Claim 30, wherein the movable support structure fits partially within a recess in the patient support structure.

32. A lift-assisted device as set forth in Claim 30, wherein the movable support structure includes a first end part arranged for slidable engagement with the patient support structure and a second end part supporting the loading wheel and being pivotally connected to the first end part.

33. A lift-assisted device comprising:
a patient support structure having a movable part;
a base;
an undercarriage extending between the patient support structure and the base;
a power source for applying a driving force to raise or lower the patient support structure with respect to the base; and
a height adjustment and locking mechanism including a locking bar positioned for locking engagement with the movable part of the patient support structure.

34. A lift-assisted device as set forth in Claim 33, wherein the undercarriage has a member with an end attached to the movable part of the patient support structure, and wherein the undercarriage member and the movable part of the patient support structure are adapted to move in response to the driving force.

35. A lift-assisted device as set forth in Claim 34, wherein the undercarriage member has another end pivotally attached to the base.

36. A lift-assisted device as set forth in Claim 33, wherein the locking bar is rotatable and has notches.

37. A lift-assisted device as set forth in Claim 33, wherein the movable part of the patient support structure has an notched opening shaped to receive the locking bar,

wherein the locking bar extends through the opening, and notches on the locking bar are adapted to engage a notch of the opening to prevent movement of the movable part of patient support structure.

38. A lift-assisted device as set forth in Claim 33, the height adjustment and locking mechanism having a control device adapted for simultaneous powering of the power source and disengagement of the locking bar.

39. A lift-assisted device as set forth in Claim 38, further comprising a valve for operating the power source and a linkage between the locking bar and to the control device for rotating the locking bar.

40. A lift-assisted device as set forth in Claim 39, wherein the control device controls the valve and the linkage.

41. A mobile patient transport device comprising:
a patient support structure;
a base having wheels for moving the device over a surface;
an undercarriage arranged between the patient support structure and the base adapted for raising and lowering the patient support structure with respect to the base,

at least one of the patient support structure, the base, and the undercarriage including a composite material of resin and carbon fiber.

42. A mobile lift-assisted device according to Claim 41, each of the patient support structure, the base, and the undercarriage including at least one member formed of a composite material of resin and carbon fiber.

43. A mobile lift-assisted device according to Claim 41, the undercarriage including:

at least one first scissors linkage member slidably connected to the patient transport surface and pivotally connected to the base,

at least one second scissors linkage member pivotally connected to the patient support structure and slidably connected to the base;

each of the first scissors linkage members being formed of a composite of carbon fiber and resin.

44. A mobile lift-assisted device according to Claim 41, the patient transport portion having a body formed of a composite of carbon fiber and resin.

45. A mobile lift-assisted device according to Claim 44, wherein the body of the patient transport portion has recesses for receiving a power source for raising and lowering the patient support structure with respect to the base.

46. A mobile lift-assisted device according to Claim 41, further comprising a power source.

47. A mobile lift-assisted device according to Claim 30, wherein the power source comprises at least one pneumatic cylinder.

48. A mobile lift-assisted device according to Claim 47, wherein the power source further includes at least one compressed gas tank in operative communication with the at least one pneumatic cylinder.
